

What is claimed is:

1. A navigation system comprising:  
an inertial measurement unit having a clock;  
5 a navigation computer having a clock; and,  
a clock controller, wherein the clock  
controller enables only the navigation computer to be  
clocked by the clock of the navigation computer at times,  
and wherein the clock controller enables both the  
10 navigation computer and the inertial measurement unit to  
be clocked by the clock of the navigation computer at  
other times.
2. The navigation system of claim 1 wherein  
15 the clock controller comprises a phase controller that  
controls the phase of a clock signal.
3. The navigation system of claim 1 wherein  
the inertial measurement unit includes a first switch,  
20 wherein the navigation computer includes a second switch,  
and wherein the clock controller controls the first and  
second switches so as to enable only the navigation  
computer to be clocked by the clock of the navigation  
computer at times, and so as to enable both the

navigation computer and the inertial measurement unit to be clocked by the clock of the navigation computer at other times.

5                   4.    The navigation system of claim 3 wherein the first switch comprises first and second terminals, wherein the first terminal is coupled to the clock of the inertial measurement unit and the second terminal is coupled to the second switch, wherein the second switch  
10 comprises a third terminal, wherein the third terminal is coupled to the clock of the navigation computer, and wherein the clock controller controls the first and second switches.

15                   5.    The navigation system of claim 1 further comprising a GPS receiver having a clock, wherein the clock of the GPS receiver is coupled to the clock controller, wherein the clock controller enables all of the inertial measurement unit, the navigation computer,  
20 and the GPS receiver to be clocked by the clock of the GPS receiver at still other times.

6.    The navigation system of claim 5 wherein the inertial measurement unit includes a first switch,

wherein the navigation computer includes a second switch,  
and wherein the clock controller controls the first and  
second switches so as to enable only the navigation  
computer to be clocked by the clock of the navigation  
5 computer at times, so as to enable both the inertial  
measurement unit and the navigation computer to be  
clocked by the clock of the navigation computer at other  
times, and to enable all of the inertial measurement  
unit, the navigation computer, and the GPS receiver to be  
10 clocked by the clock of the GPS receiver at still other  
times.

7. The navigation system of claim 6 wherein  
the first switch comprises first and second terminals and  
15 a first output, wherein the second switch comprises third  
and fourth terminals and a second output, wherein the  
first terminal is coupled to the clock of the inertial  
measurement unit, wherein the second terminal is coupled  
to the second output, wherein the third terminal is  
20 coupled to the clock of the navigation computer, wherein  
the fourth terminal is coupled to the clock controller,  
wherein the clock of the GPS receiver is coupled to the  
clock controller, and wherein the clock controller  
controls the first and second switches.

8. The navigation system of claim 5 wherein  
the clock controller comprises a phase controller that  
controls the phase of a clock signal from the clock of  
5 the GPS receiver.

9. The navigation system of claim 8 wherein  
the inertial measurement unit includes a first switch,  
wherein the navigation computer includes a second switch,  
10 and wherein the clock controller controls the first and  
second switches so as to enable only the navigation  
computer to be clocked by the clock of the navigation  
computer at times, so as to enable both the inertial  
measurement unit and the navigation computer to be  
15 clocked by the clock of the navigation computer at other  
times, and so as to enable all of the inertial  
measurement unit, the navigation computer, and the GPS  
receiver to be clocked by the clock of the GPS receiver  
at still other times.

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10. The navigation system of claim 9 wherein  
the first switch comprises first and second terminals and  
a first output, wherein the second switch comprises third  
and fourth terminals and a second output, wherein the

first terminal is coupled to the clock of the inertial measurement unit, wherein the second terminal is coupled to the second output, wherein the third terminal is coupled to the clock of the navigation computer, wherein  
5 the fourth terminal is coupled to the clock controller, wherein the clock of the GPS receiver is coupled to the clock controller, and wherein the clock controller controls the first, second, and third switches.

10           11. The navigation system of claim 8 wherein the phase controller comprises a count down register having a first input coupled to a clock source operating at a multiple of the clock of the GPS receiver, a second input coupled to the clock of the GPS receiver, and a  
15 third input receiving an initial count value.

          12. A navigation system comprising:  
          an inertial measurement unit having a first clock and a first switch;  
20           a navigation computer having a second clock and a second switch; and,  
          a clock controller, wherein the clock controller controls the first and second switches so as to selectively supply a clock signal from the second

clock to only the navigation computer and to both the navigation computer and the inertial measurement unit.

13. The navigation system of claim 12 wherein  
5 the clock controller comprises a phase controller that controls the phase of the clock signal.

14. The navigation system of claim 12 wherein  
the first switch comprises first and second terminals,  
10 wherein the first terminal is coupled to the clock of the inertial measurement unit and the second terminal is coupled to the second switch, wherein the second switch comprises a third terminal, wherein the third terminal is coupled to the clock of the navigation computer, and  
15 wherein the clock controller controls the first and second switches.

15. The navigation system of claim 12 further comprising a GPS receiver having a clock, wherein the  
20 clock of the GPS receiver is coupled to the clock controller, and wherein the clock controller controls the first and second switches so as to selectively supply a clock signal from the clock of the GPS receiver to all of

the inertial measurement unit, the navigation computer,  
and the GPS receiver.

16. The navigation system of claim 15 wherein  
5 the first switch comprises first and second terminals and  
a first output, wherein the second switch comprises third  
and fourth terminals and a second output, wherein the  
first terminal is coupled to the clock of the inertial  
measurement unit, wherein the second terminal is coupled  
10 to the second output, wherein the third terminal is  
coupled to the clock of the navigation computer, wherein  
the fourth terminal is coupled to the clock controller,  
wherein the clock of the GPS receiver is coupled to the  
clock controller, and wherein the clock controller  
15 controls the first and second switches.

17. The navigation system of claim 15 wherein  
the clock controller comprises a phase controller that  
controls the phase of the clock signal from the clock of  
20 the GPS receiver.

18. The navigation system of claim 17 wherein  
the first switch comprises first and second terminals and  
a first output, wherein the second switch comprises third

and fourth terminals and a second output, wherein the first terminal is coupled to the clock of the inertial measurement unit, wherein the second terminal is coupled to the second output, wherein the third terminal is  
5 coupled to the clock of the navigation computer, wherein the fourth terminal is coupled to the clock controller, wherein the clock of the GPS receiver is coupled to the clock controller, and wherein the clock controller controls the first, second, and third switches.

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19. The navigation system of claim 17 wherein the phase controller comprises a count down register having a first input coupled to a clock source operating at a multiple of the clock of the GPS receiver, a second  
15 input coupled to the clock of the GPS receiver, and a third input receiving an initial count value.

20. A method comprising:

supplying a first clock signal from a clock of  
20 a navigation computer only to components of the navigation computer in response to a first condition;

supplying the first clock signal from the clock of the navigation computer to components of the



navigation computer and to components of an inertial  
measurement unit in response to a second condition; and,  
supplying a second clock signal from a clock of  
a GPS receiver to components of the GPS receiver, to  
5 components of the navigation computer, and to components  
of the inertial measurement unit in response to a third  
condition.

21. The method of claim 20 wherein the first  
10 condition comprises absence of the inertial measurement  
unit.

22. The method of claim 20 wherein the first  
condition comprises failure of the inertial measurement  
15 unit.

23. The method of claim 20 wherein the second  
condition comprises correct operation of the inertial  
measurement unit and absence of deep integration of the  
20 GPS receiver.

24. The method of claim 20 wherein the second  
condition comprises correct operation of the inertial

measurement unit and non-execution of deep integration of the GPS receiver.

25. The method of claim 20 wherein the third  
5 condition comprises execution of deep integration of the GPS receiver.

26. The method of claim 20 further comprising  
adjusting time alignment of inertial data from the  
10 inertial measurement unit, GPS data from the GPS receiver, and tracking loop commands provided by the navigation computer.

27. The method of claim 26 wherein the first  
15 condition comprises absence of the inertial measurement unit.

28. The method of claim 26 wherein the first  
condition comprises failure of the inertial measurement  
20 unit.

29. The method of claim 26 wherein the second  
condition comprises correct operation of the inertial

measurement unit and absence of deep integration of the  
GPS receiver.

30. The method of claim 26 wherein the second  
5 condition comprises correct operation of the inertial  
measurement unit and non-execution of deep integration of  
the GPS receiver.

31. The method of claim 26 wherein the third  
10 condition comprises execution of deep integration of the  
GPS receiver.

32. The method of claim 20 wherein the first  
condition comprises failure of the inertial measurement  
15 unit, and wherein the second condition comprises correct  
operation of the inertial measurement unit and non-  
execution of deep integration of the GPS receiver.

33. The method of claim 32 wherein the third  
20 condition comprises execution of deep integration of the  
GPS receiver.